

How Can Existing Research Inform Better Stream and Wetland Restoration Design?

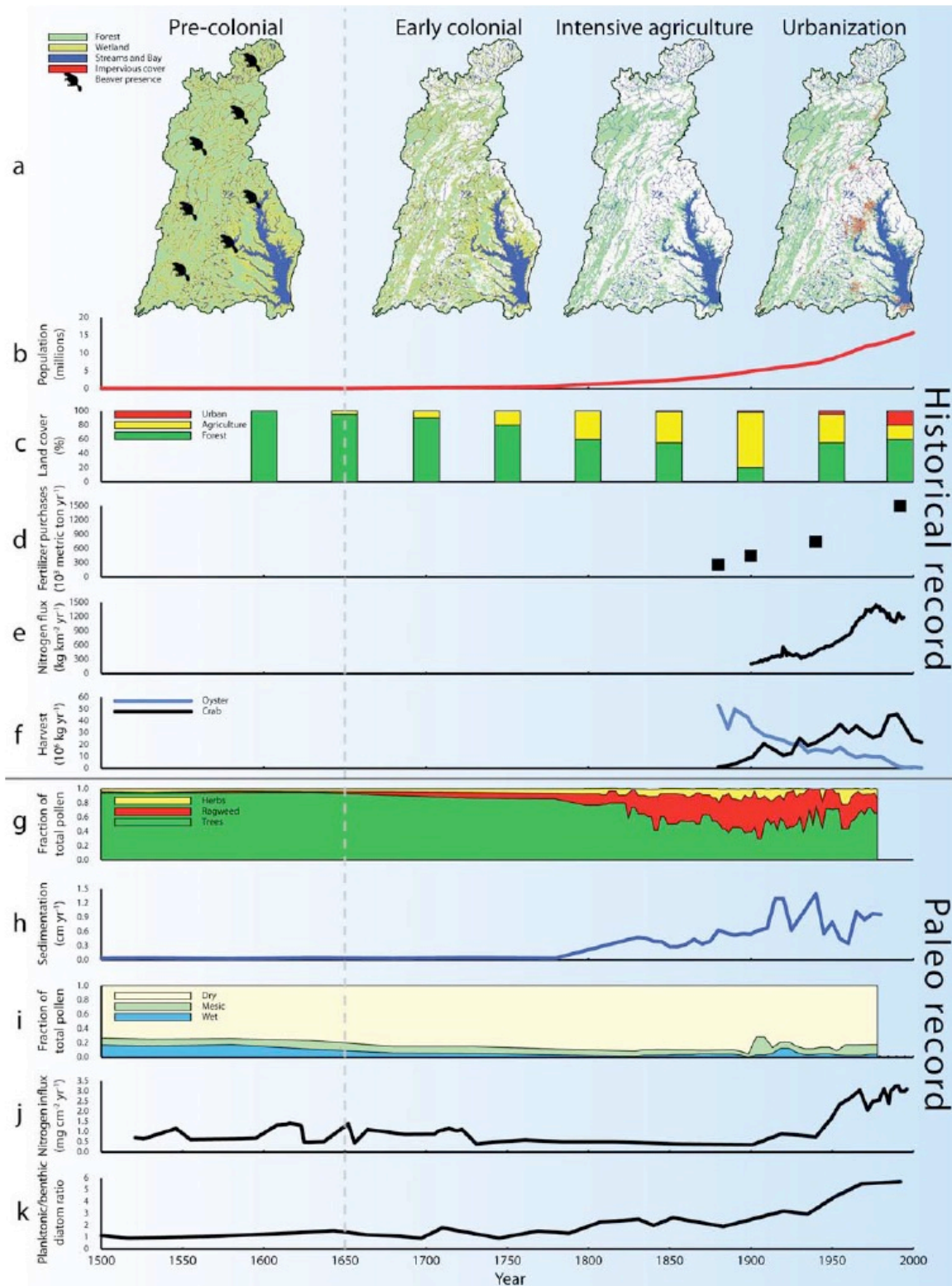
PaxCon, November 12, 2020

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www.aarivers.org





Brush, G. (2008). Historical land use, nitrogen, and coastal eutrophication: A paleoecological perspective. *Estuaries and Coasts*.

The beaver population in North America in precolonial time is estimated to have been between 60 and 400 million individuals.





“Every River where the current was moderate and sufficiently deep, the banks at the water edge were occupied by their houses. To every small Lake and all the Ponds they builded Dams, and enlarged and deepened them to the height of their dams. Even to grounds occasionally overflowed by heavy rains, they also made dams, and made the permanent Ponds, and as they heightened the dams [they] increased the extent and added to the depth of the water; Thus all of the low lands were in possession of the Beaver, and all of the hollows of the high grounds.” David Thompson (1770-1857)



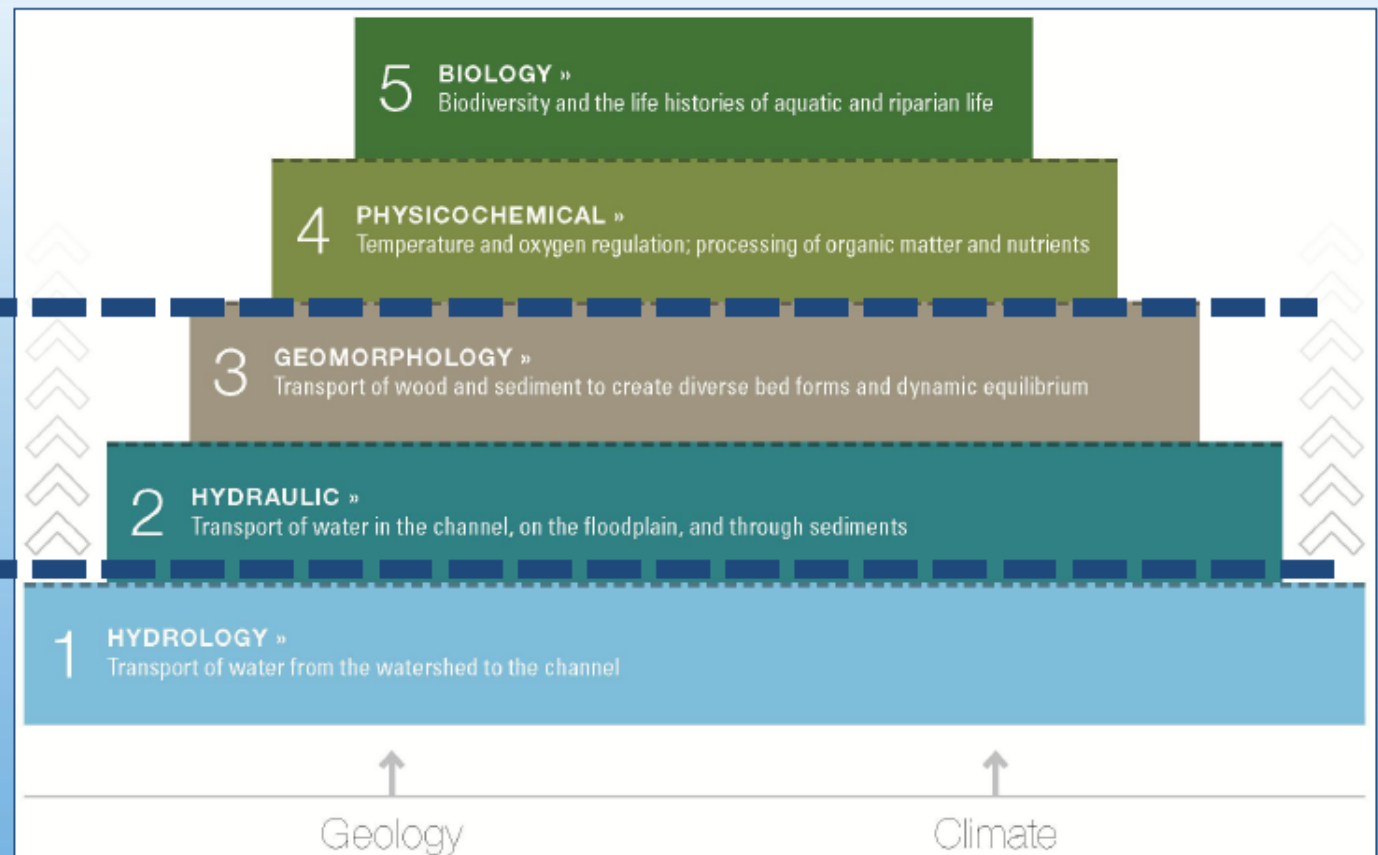


Site Selection

Reach Scale
Improvements

Generally
Independent
Variables.

May be altered in headwater streams.



Transport Reach - A stable channel that transports water and sediment without aggrading or degrading









Transport v. Retention







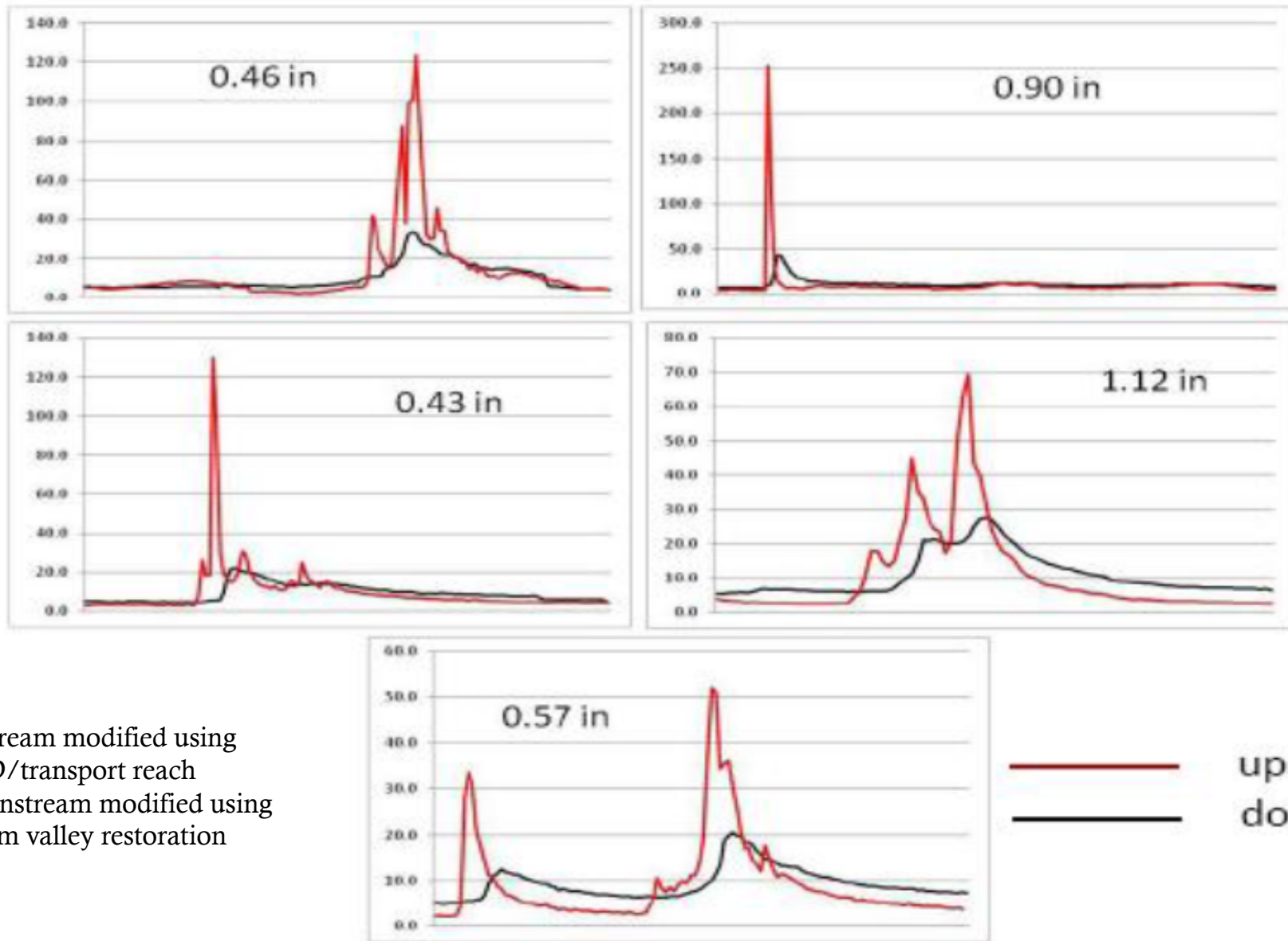








Discharge (L/s)



- Upstream modified using NCD/transport reach
- Downstream modified using stream valley restoration

Hydrographs During Individual Storms of Two “Restored” Reaches

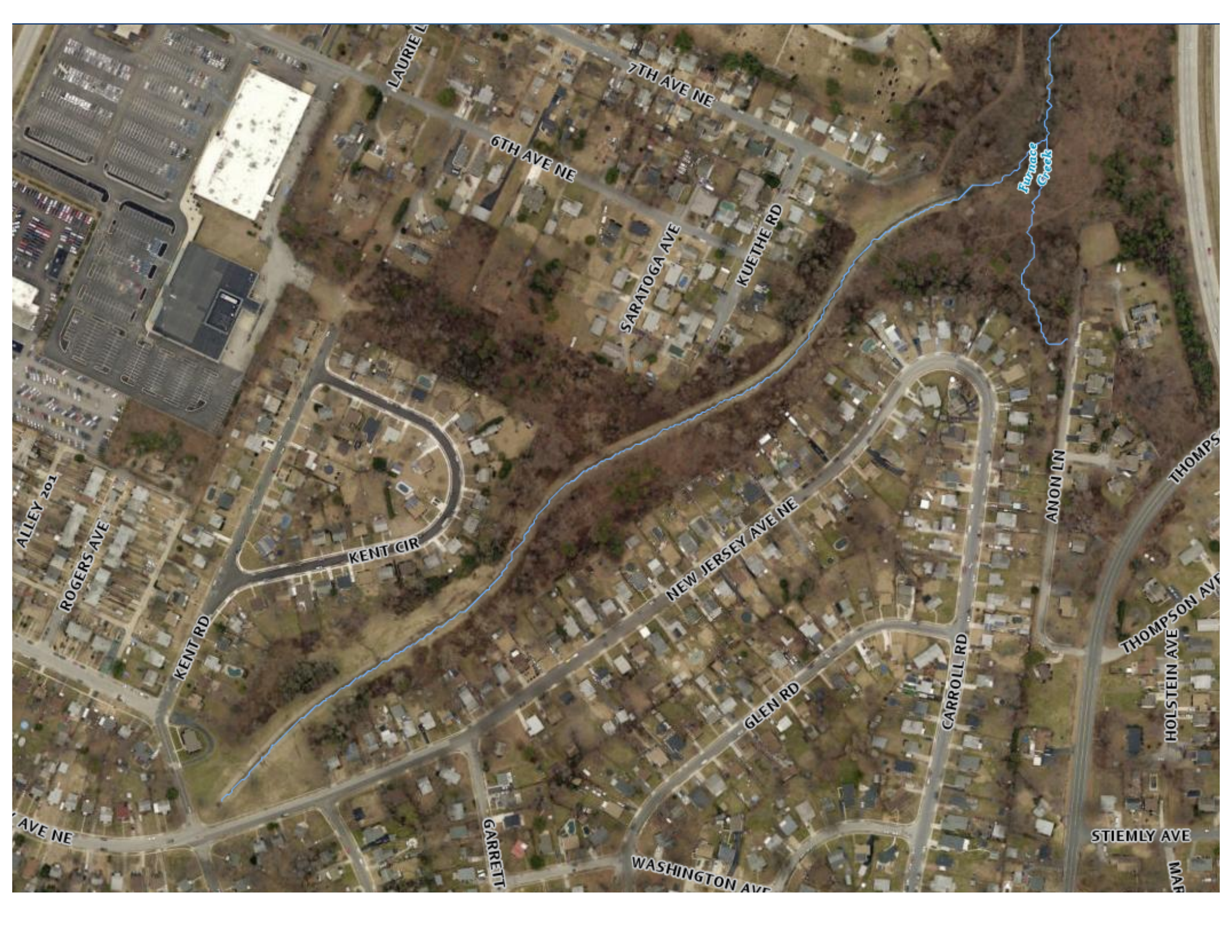












LAURIE L

7TH AVE NE

6TH AVE NE

SARATOGA AVE

KUETHE RD

Furnace Creek

KENT CIR

NEW JERSEY AVE NE

ALLEY 201

ROGERS AVE

KENT RD

GLEN RD

CARROLL RD

ANON LN

THOMPS

THOMPSON AVE

HOLSTEIN AVE

STIEMLY AVE

AVE NE


GARRETT

WASHINGTON AVE

MAP







**System Hydrology Drives Functionality
at Every Level of the System, and
“Restoration” that Does Not Improve
Groundwater and Carbon Retention is
Unlikely to Provide Significant Benefit
in the Other Levels of the Pyramid**

Questions?

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